

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): Ephraim Feig
Docket No.: SOM919990019US1
Serial No.: 09/736,258
Filing Date: December 15, 2000
Group: 2154
Examiner: Haresh N. Patel

Title: Application Server and Streaming Server Streaming
Multimedia File in a Client Specific Format (As Amended)

APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

Sir:

Applicant (hereinafter referred to as "Appellant") hereby appeals the final rejection of claims 1-15 of the above referenced application.

REAL PARTY IN INTEREST

The present application is assigned to International Business Machines Corp., as evidenced by an assignment recorded May 9, 2001 in the U.S. Patent and Trademark Office at Reel 11786, Frame 0969. The assignee, International Business Machines Corp., is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals and interferences.

STATUS OF CLAIMS

Claims 1-15 are pending in the present application. Claims 1-15 stand rejected under 35 U.S.C. §103(a) and are appealed.

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to a method and system for selectively storing files, and more particularly, to a method and system for selectively storing multimedia files on application servers and streaming servers, based on a number of client requests, in which the streaming servers are capable of streaming multimedia files over a communications network to requesting clients (Specification, page 1, lines 2-6).

Claim 1 provides a method for transferring multimedia data using a data communication system. A multimedia file including a plurality of groups of multimedia data is stored on an application server. Each group has a predetermined data size. A client request is received and a client address is read at the application server. The client address corresponds to at least one client apparatus. Consecutive groups are stripped from the multimedia file and buffered in a staging buffer. The consecutive groups from the staging buffer and the client address are transferred to a streaming server. Each of the consecutive groups received from the staging buffer are converted at the streaming server into a format readable by the at least one client apparatus. Each of the consecutive groups are sent to the at least one client apparatus. The multimedia file is selectively stored on at least one of the application server and the streaming server based on a number of client requests received for the multimedia file.

By way of example, an illustrative embodiment of the invention of claim 1 is shown in FIG. 17 of the drawings. FIG. 17 shows a sequence of operation steps for this embodiment of the present invention. At block s800, an application server stores a multimedia file, such as video file 200 of FIG. 9. The process then flows to block s801, where the application server receives a client request from a client apparatus. Further, the application server reads a client address of the requesting client

apparatus based on the content of the client request. The process then flows to block s802, where the application server strips consecutive groups of data of the multimedia file. Next, the process flows to block s804, where the application server buffers the stripped groups in a staging buffer. The process then continues to block s806, where the application server transfers the client address, and the consecutive groups from the staging buffer to a streaming server. The process then continues to block s808, where the streaming server converts the consecutive groups into a standard streaming format. The process then flows to block s810, where the streaming server sends the converted groups to the client apparatus corresponding to the client address read by the application server.

Referring to FIG. 1, the network diagram illustrates the relationship between a multimedia device 10, an application server 20, a streaming server 30, a web management server 59, and a plurality of client apparatuses 501, 50b, 50c, 50d, as they are interconnected over Internet 40.

Further, as recited in claim 7, a transfer rate from the application server to the streaming server and a sending rate from the streaming server to the at least one client apparatus is determined at the streaming server. The transfer rate is compared to the sending rate before the streaming server performs the converting step. By way of example, an illustrative embodiment of the invention of claim 7 is shown in FIG. 12. A transfer rate and a sending rate are determined in block s322, and in block s324 it is determined if the transfer rate is greater than the sending rate.

Additionally, as recited in claim 9, the step of selectively storing the multimedia file comprises the step of determining in a request handler of the application server, the number of client requests from the at least one client apparatus for the multimedia file. By way of example, an illustrative embodiment of the invention of claim 9 is shown in FIG. 12. A number of client requests for a multimedia file is determined in block s344.

As recited in claims 11 and 13, the step of selectively storing the multimedia file comprises additional steps. It is determined in the streaming server according to a garbage-collection algorithm, a rate of sending of the multimedia file from the streaming server to the at least one client apparatus. The rate of sending to a threshold number is compared. The multimedia file from the streaming server is purged when the rate of sending is less than the threshold number or kept when greater than the threshold number. By way of example, an illustrative embodiment of the invention

of claim 11 is shown in FIG. 12. The rate at which the multimedia file has been sent is determined in block s334, and this rate is compared to a threshold number in block s336.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

I. Claims 1, 4 and 5 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,996,015 to Day et al. (hereinafter “Day”) in view of U.S. Patent No. 5,805,821 to Saxena et al. (hereinafter “Saxena”) and U.S. Patent Application Publication No. 2002/0138640 to Raz et al. (hereinafter “Raz”).

II. Claims 2 and 3 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Day in view of Saxena, Raz and U.S. Patent No. 5,933,155 to Akeley (hereinafter “Akeley”).

III. Claim 6 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Day in view of Saxena, Raz, U.S. Patent No. 6,681,306 to Kessler et al. (hereinafter “Kessler”), U.S. Patent Application Publication No. 2001/0034736 to Eylon et al. (hereinafter “Eylon”), and U.S. Patent No. 6,857,130 to Srikantan et al. (hereinafter “Srikantan”).

IV. Claims 7 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Day in view of Saxena, Raz, U.S. Patent No. 6,405,256 to Lin et al. (hereinafter “Lin”) and “Official Notice.”

V. Claims 9 and 10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Day in view of Saxena, Raz, U.S. Patent No. 6,185,184 to Mattaway et al. (hereinafter “Mattaway”) and U.S. Patent Application Publication No. 2002/0023127 to Sabeti (hereinafter “Sabeti”).

VI. Claims 11 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Day in view of Saxena, Raz, Kessler and U.S. Patent No. 6,732,111 to Brodersen et al. (hereinafter “Brodersen”).

VII. Claims 13 and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Day in view of Saxena, Raz, Kessler, Brodersen and U.S. Patent No. 5,832,499 to Gustman (hereinafter “Gustman”).

VIII. Claim 15 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Day in view of Saxena, Raz and U.S. Patent No. 6,037,991 to Thro et al. (hereinafter “Thro”).

ARGUMENT

Appellants incorporate by reference herein the disclosures of all previous responses filed in the present application, namely, responses dated September 27, 2004, June 30, 2005 and December 30, 2005. Sections I through VIII to follow will respectively address grounds I through VIII presented above.

I. Obviousness rejection of claims 1, 4 and 5

With regard to the rejection of claims 1, 4 and 5 under 35 U.S.C. §103(a) as being unpatentable over Day in view of Saxena and Raz, Appellant respectfully asserts that the cited combination fails to establish a prima facie case of obviousness under 35 U.S.C. §103(a), as specified in M.P.E.P. §2143.

As set forth therein, M.P.E.P. §2143 states that three requirements must be met to establish a prima facie case of obviousness. First, the cited combination must teach or suggest all the claim limitations. Second, there must be a reasonable expectation of success. Third, there must be some suggestion or motivation to combine reference teachings. It is sufficient to show that a prima facie case of obviousness has not been established by showing that only one of the requirements has not been met. Thus, with respect to claims 1, 4 and 5, a prima facie case of obviousness has not been established, because the collective teaching of Day, Saxena and Raz fails to teach or suggest the elements of such claims.

Day discloses a multimedia server connected in a network configuration with client computer systems. The multimedia server includes various functional units selectively operable for delivering and effecting the presentation of multimedia files to the client. Two embodiments are provided. A first embodiment is provided in FIG. 1 having a format server 107, a controller unit 109, and a data pump 111 arranged as separate machines. Day states, in column 3, lines 43-45, that “[t]he data pump 111 stores multimedia assets, and delivers assets to the clients.” Thus, the first embodiment of Day fails to disclose an application server that stores multimedia data and a separate streaming server that converts and transmits multimedia data.

In a second embodiment, Day discloses a multimedia server 201 that includes a presentation manager 207, an application server 209, a control server unit 211, a data pump arrangement 213, and

a multimedia file system 215. Day discloses that multimedia assets are stored in the multimedia file system and the data pump 213 streams data to the client.

In providing the rejection to independent claim 1, the Examiner continuously cites portions of the Day that are unrelated to each other, and thus not combinable in the manner proposed in the present invention. For example, in rejecting the limitation of “storing on an application server a multimedia file including a plurality groups of multimedia data,” the Examiner first refers to a portion of Day that describes a database on an application server that stores asset information, such as title and subject of a presentation, without reference to groups of multimedia data. The Examiner then refers to a portion of Day that describes the seamless concatenation of video segments without reference to storage on the application server. Thus, two unrelated portions of Day are used to support a rejection of a single element, namely the storing of a plurality of groups of multimedia data on an application server.

This method of providing support for a rejection is also evident in the rejection of the converting step of independent claim 1. The Examiner first refers to a portion of Day describing an encoding of operating characteristics without reference to a streaming server or a buffer, then refers to portions of Day describing the multimedia server’s ability, to stream and a database on an application server that stores asset information, without reference to multimedia conversion or encoding. Thus, two unrelated portions of Day are used to support a rejection that specifically recites conversion at the streaming server of consecutive groups of multimedia data from a staging buffer.

As admitted by the Examiner, Day fails to disclose a predetermined data group size, the reading of a client address corresponding to the client apparatus, the buffering of consecutive groups in a staging buffer, the transfer of the groups from the staging buffer to a streaming server, and the selective storing of the multimedia file on at least one of the servers based on the number of client requests for the file.

Appellant asserts that Day also fails to disclose the converting of multimedia data to a format readable by the at least one client apparatus at the streaming server. More specifically, in Day, the data pump 213 is responsible for streaming data to the client system. However, the data pump 213 is not responsible for formatting the content. Instead, this task is performed by the presentation

formatter. Thus, the multimedia data is not converted into a readable format at the streaming server of Day.

The Examiner presents Saxena and Raz in order to remedy the deficiencies described above with regard to Day. Saxena discloses a media streamer optimized for the delivery of isochronous data streams and able to stream data into new computer networks with ATM technology. Raz discloses a system for streaming software to a plurality of clients.

Appellant asserts that Saxena and Raz fail to remedy all of the deficiencies described above with regard to Day. More specifically, the Examiner presents Saxena in order to remedy the deficiencies of Day relating to storing multimedia data having a predetermined data size, reading a client address corresponding to a client apparatus at the application server, stripping consecutive groups and buffering consecutive groups in a staging buffer. However, Saxena describes striping, or data distribution over a number of disks, not stripping, and also describes software that enables staging. Thus, Saxena fails to disclose the stripping of consecutive groups from a multimedia file and the buffering of these consecutive groups in a staging buffer. Raz also fails to remedy these deficiencies of Day. Therefore, because Saxena and Raz fail to remedy the deficiencies of Day described above, the combination of Day, Saxena and Raz fails to disclose every element as recited in independent claim 1.

Appellant notes the use of Raz as a prior art reference without any assurance that the subject matter relied upon in this reference was disclosed in its respective provisional and/or parent applications, as would be required for this reference to be considered prior art.

Dependent claims 4 and 5 are patentable at least by virtue of their dependency from independent claim 1. The patentability of claim 1 is described above. Dependent claims 4 and 5 also recite patentable subject matter in their own right. Accordingly, Appellant therefore respectfully requests withdrawal of the §103(a) rejection of claims 1, 4 and 5.

II. Obviousness rejection of claims 2 and 3

With regard to the §103(a) rejection of claims 2 and 3 based on a combination of Day, Saxena, Raz and Akeley, Appellant respectfully asserts that the cited combination fails to establish a prima facie case of obviousness under 35 U.S.C. §103(a), as specified in M.P.E.P. §2143.

Appellant asserts that Akeley fails to remedy the deficiencies of the combination of Day, Saxena and Raz described above. As such, Appellant asserts that dependent claims 2 and 3 are patentable at least by virtue of their dependency from independent claim 1. Dependent claims 2 and 3 also recite patentable subject matter in their own right. Accordingly, Appellant therefore respectfully requests withdrawal of the §103(a) rejection of claims 2 and 3.

III. Obviousness rejection of claim 6

With regard to the §103(a) rejection of claim 6 based on a combination of Day, Saxena, Raz, Kessler, Eylon and Srikantan. Appellant respectfully asserts that the cited combination fails to establish a prima facie case of obviousness under 35 U.S.C. §103(a), as specified in M.P.E.P. §2143.

Appellant asserts that Kessler, Eylon and Srikantan fail to remedy the deficiencies of the combination of Day, Saxena and Raz described above. As such, Appellant asserts that dependent claim 6 is patentable at least by virtue of its dependency from independent claim 1. Appellant further asserts that the excessive number of references required by the Examiner to attempt an obviousness rejection lends weight to the argument that such limitations of claim 6 are not obvious and are patentable. Dependent claim 6 also recites patentable subject matter in its own right. Accordingly, Appellant therefore respectfully requests withdrawal of the §103(a) rejection of claim 6.

IV. Obviousness rejection of claims 7 and 8

With regard to the §103(a) rejection of claims 7 and 8 based on a combination of Day, Saxena, Raz, Lin and Official Notice, Appellant respectfully asserts that the cited combination fails to establish a prima facie case of obviousness under 35 U.S.C. §103(a), as specified in M.P.E.P. §2143.

Appellant asserts that Lin and Official Notice fails to remedy the deficiencies of the combination of Day, Saxena and Raz described above. As such, Appellant asserts that dependent claims 7 and 8 are patentable at least by virtue of their dependency from independent claim 1. Dependent claims 7 and 8 also recite patentable subject matter in their own right. For example, Lin is presented by the Examiner in order to remedy the deficiency of Day, Saxena and Raz relating to

determining and comparing transfer and sending rates. While Lin describes a network server and caching servers with expandable buffers, there is no discussion of transfer rates from an application server to a streaming server, nor sending rates from the streaming server to a client apparatus. The Examiner cites Official Notice in order to remedy the deficiency of Day, Saxena, Raz and Lin relating to a comparison of transfer rates and sending rates. Appellants have previously requested that the Examiner provide documentary evidence to support such contentions established in the final Office Action. No such documentary evidence has been provided. Accordingly, Appellant therefore respectfully requests withdrawal of the §103(a) rejection of claims 7 and 8.

V. Obviousness rejection of claims 9 and 10

With regard to the §103(a) rejection of claims 9 and 10 based on a combination of Day, Saxena, Raz, Mattaway and Sabeti, Appellant respectfully asserts that the cited combination fails to establish a prima facie case of obviousness under 35 U.S.C. §103(a), as specified in M.P.E.P. §2143.

Appellant asserts that Mattaway and Sabeti fail to remedy the deficiencies of the combination of Day, Saxena and Raz described above. As such, Appellant asserts that dependent claims 9 and 10 are patentable at least by virtue of their dependency from independent claim 1. Dependent claims 9 and 10 also recite patentable subject matter in their own right.

For example, with regard to claim 9, the combination of Day, Saxena, Raz, Mattaway and Sabeti fails to disclose the determination, in a request handler, of a number of client requests, from at least one client apparatus, for a multimedia file. More specifically, the Examiner contends that Mattaway discloses this determination step. However, Mattaway only discloses a directory server apparatus for providing the current dynamically assigned Internet Protocol addresses of client processes currently connected to a computer network. A list of entries is maintained, however Mattaway provides no disclosure of a determination of a number of client requests for a multimedia file from at least one client apparatus.

Additionally, with regard to claim 10, the combination of Day, Saxena, Raz, Mattaway and Sabeti fails to disclose the comparison of a number of client requests to a threshold number and the transferring of a multimedia file between servers when the number is greater than the threshold

number. More specifically, the Examiner contends that Sabeti discloses these specific steps. However, Sabeti fails to disclose an application server and a streaming server and also fails to disclose anything regarding the transfer of a file between these two servers after a threshold number of requests are received. Appellant notes the use of Sabeti as a prior art references without any assurance that the subject matter relied upon in this reference was disclosed in its respective provisional and/or parent applications, as would be required for this reference to be considered prior art. Accordingly, Appellant therefore respectfully requests withdrawal of the §103(a) rejection of claims 9 and 10.

VI. Obviousness rejection of claims 11 and 12

With regard to the §103(a) rejection of claims 11 and 12 based on a combination of Day, Saxena, Raz, Kessler and Brodersen, Appellant respectfully asserts that the cited combination fails to establish a prima facie case of obviousness under 35 U.S.C. §103(a), as specified in M.P.E.P. §2143.

Appellant asserts that Kessler and Brodersen fail to remedy the deficiencies of the combination of Day, Saxena and Raz described above. As such, Appellant asserts that dependent claims 11 and 12 are patentable at least by virtue of their dependency from independent claim 1. Dependent claims 11 and 12 also recite patentable subject matter in their own right.

With regard to claims 11 and 12, the combination of Day, Saxena, Raz, Kessler and Brodersen fails to provide any disclosure regarding the determination of a rate of sending multimedia from a streaming server to a client; the comparison of this rate to a threshold; and the purging of the multimedia file when the rate is less than the threshold. More specifically, the Examiner contends that Brodersen discloses these steps, however, Brodersen only discloses the attachment of non-database objects to any business object that a developer chooses. Appellant notes the use of Brodersen as a prior art reference without any assurance that the subject matter relied upon in this reference was disclosed in its respective provisional and/or parent applications, as would be required for this reference to be considered prior art. Accordingly, Appellant therefore respectfully requests withdrawal of the §103(a) rejection of claims 11 and 12.

VII. Obviousness rejection of claims 13 and 14

With regard to the §103(a) rejection of claims 13 and 14 based on a combination of Day, Saxena, Raz, Kessler Brodersen and Gustman, Appellant respectfully asserts that the cited combination fails to establish a prima facie case of obviousness under 35 U.S.C. §103(a), as specified in M.P.E.P. §2143.

Appellant asserts that Kessler, Brodersen and Gustman fail to remedy the deficiencies of the combination of Day, Saxena and Raz described above. As such, Appellant asserts that dependent claims 13 and 14 are patentable at least by virtue of their dependency from independent claim 1. Dependent claims 13 and 14 also recite patentable subject matter in their own right. While the Examiner cites Brodersen in order to remedy the deficiencies of the combination of Day, Saxena, Raz and Kessler with regard to determining a sending rate, and comparing the sending rate to a threshold number, Brodersen only discloses methods of attaching files. More specifically, Brodersen fails to disclose anything related to sending rate determinations and sending rate thresholds. Appellant further asserts that the excessive number of references required by the Examiner to attempt an obviousness rejection lends weight to the argument that such limitations of claims 13 and 14 are not obvious and are patentable. Accordingly, Appellant therefore respectfully requests withdrawal of the 103(a) rejection of claims 13 and 14.

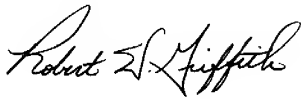
VIII. Obviousness rejection of claim 15

With regard to the §103(a) rejection of claim 15 based on a combination of Day, Saxena, Raz and Thro, Appellant respectfully asserts that the cited combination fails to establish a prima facie case of obviousness under 35 U.S.C. §103(a), as specified in M.P.E.P. §2143.

Appellant asserts that Thro fails to remedy the deficiencies of the combination of Day, Saxena and Raz described above. As such, Appellant asserts that dependent claim 15 is patentable at least by virtue of their dependency from independent claim 1. Dependent claim 15 also recites patentable subject matter in its own right. Accordingly, Appellant therefore respectfully requests withdrawal of the 103(a) rejection of claim 15.

In view of the above, Appellants believe that claims 1-15 are in condition for allowance, and respectfully request withdrawal of the §103(a) rejections.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert W. Griffith". The signature is fluid and cursive, with the first name "Robert" and last name "Griffith" clearly legible.

Date: May 16, 2006

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CLAIMS APPENDIX

1. A method for transferring multimedia data using a data communication system, comprising the steps of:

storing on an application server a multimedia file including a plurality groups of multimedia data, each group having a predetermined data size;

receiving a client request and reading a client address at the application server, the client address corresponding to at least one client apparatus;

stripping consecutive groups from the multimedia file and buffering the consecutive groups in a staging buffer;

transferring to a streaming server, the consecutive groups from the staging buffer and the client address;

converting at the streaming server, each of the consecutive groups received from the staging buffer into a format readable by the at least one client apparatus;

sending each of the consecutive groups to the at least one client apparatus; and

selectively storing the multimedia file on at least one of the application server and the streaming server based on a number of client requests received for the multimedia file.

2. The method according to claim 1, wherein the multimedia file is a video file, each group of multimedia data comprises a video frame, each frame corresponds to a frame display duration, and a rate at which consecutive frames are transferred to the streaming server from the staging buffer corresponds to intervals of each display duration.

3. The method according to claim 2, wherein the video file is encoded in MPEG format.

4. The method according to claim 1, wherein the at least one client apparatus is selected from a group consisting of: a personal computer, a fax machine, a hard drive, a telephone interface, a wireless telephone, a radio receiver, and a personal digital assistant (PDA).

5. The method according to claim 1, wherein the multimedia file is selected from a group consisting of: video files, music files, computer generated graphics files, still image files, and sound files.

6. The method according to claim 1, further comprising the steps of:

sending notice of a new client to the streaming server;

determining, in the streaming server according to a garbage-collection algorithm, whether there is sufficient space in the streaming server to hold the consecutive groups from the staging buffer before the application server transfers the consecutive groups from the staging buffer to the streaming server; and

purging at least one multimedia file from the streaming server when the determining step determines that there is not sufficient space in the streaming server to hold the stripped consecutive groups from the staging buffer.

7. The method according to claim 1, further comprising the steps of:

determining at the streaming server, a transfer rate from the application server to the streaming server and a sending rate from the streaming server to the at least one client apparatus; and

comparing the transfer rate to the sending rate before the streaming server performs the converting step.

8. The method according to claim 7, further comprising the step of:

waiting a predetermined time period before performing the converting step in the streaming server, when the sending rate is greater than the transfer rate.

9. The method according to claim 1, wherein the step of selectively storing the multimedia file comprises the step of:

determining in a request handler in the application server, n the number of client requests from the at least one client apparatus for the multimedia file.

10. The method according to claim 9, wherein the step of selectively storing the multimedia file further comprises the steps of:

- comparing the number of client requests for the multimedia file to a threshold number; and
- transferring the multimedia file from the application server to the streaming server when the number of client requests is greater than the threshold number.

11. The method according to claim 1, wherein the step of selectively storing the multimedia file comprises the steps of:

- determining, in the streaming server according to a garbage-collection algorithm, a rate of sending of the multimedia file from the streaming server to the at least one client apparatus;
- comparing the rate of sending to a threshold number; and
- purging the multimedia file from the streaming server when the rate of sending is less than the threshold number.

12. The method according to claim 11, wherein the rate of sending is a number of times the multimedia file has been sent over a predetermined time period, and the predetermined time period is selected from a group consisting of one minute, one hour, one day, one week, one month, and one year.

13. The method according to claim 1, wherein the step of selectively storing the multimedia file comprises the steps of:

- determining, in the streaming server according to a garbage-collection algorithm, a rate of sending of the multimedia from the streaming server to the at least one client apparatus;
- comparing the rate of sending to a threshold number; and
- keeping the multimedia file stored on the streaming server when the rate of sending is greater than the threshold number.

14. The method according to claim 13, wherein the rate of sending is a number of times the multimedia file has been sent over a predetermined time period, and the predetermined time period

is selected from a group consisting of one minute, one hour, one day, one week, one month, and one year.

15. The method according to claim 1, further comprising the step of:

determining, in a time-division multiplexer program in the streaming server, a priority order for sending the stripped consecutive groups in the sending step, when there are a plurality of the least one client apparatus.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.